The State of the Grant, Platte, & Galena River Basins

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A report by the Wisconsin Department of Natural Resources in cooperation with the Grant-Platte Basin Partnership Team and Stakeholders

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Abbreviations Used in the State of the Basin Report:

DATCP	Wisconsin Dept. of Agriculture, Trade & Consumer Protection
DNR	Wisconsin Department of Natural Resources
NRCS	Natural Resources Conservation Service
LCD	County Land Conservation Department
Southwest Badger RC&D	Southwest Badger Resource Conservation & Development Council
UW-Extension	University of Wisconsin-Extension
USDA	United States Department of Agriculture
USGS	United States Geologic Service

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http://www.dnr.state.wi.us/org/gmu/gpsp/index.htm

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THE BASIN PARTNERSHIP EFFORT

The Grant-Platte Basin lies in southwestern Wisconsin. The boundaries of the basin are determined not by county lines or state boundaries, but by the natural resources and topography of the land. In general, a basin consists of one or two principal streams and all their tributaries, in this case, the Grant River, the Platte River and, to a lesser degree, the Galena River. All of the land that drains to these rivers and streams are a part of the Grant-Platte Basin. When studying a stream, river or lake, it is necessary to look at the land around the waterbody to determine how the cumulative effects of land use and landscape can and do affect the aquatic ecosystem. By doing this, it is possible to determine how the water quality and the composition and densities of aquatic life are determined by the activities in the basin. The Wisconsin Department of Natural Resources (DNR) has chosen to manage natural resources in this way and the Grant-Platte Basin is just one of many basins statewide. To do this, the DNR must approach natural resource management in a holistic way by studying both the land and water resources of an area. The State of the Basin Report is an attempt to address the Grant-Platte Basin in such a manner.

Just as there are a variety of natural resource issues to consider at any given moment, there are also a variety of stakeholders in the basin who have differing priorities and perceptions of the natural resources in the basin. What these differing groups have to say is a very important part of natural resource management and is extremely important when trying to effectively manage the diverse resources of an area.

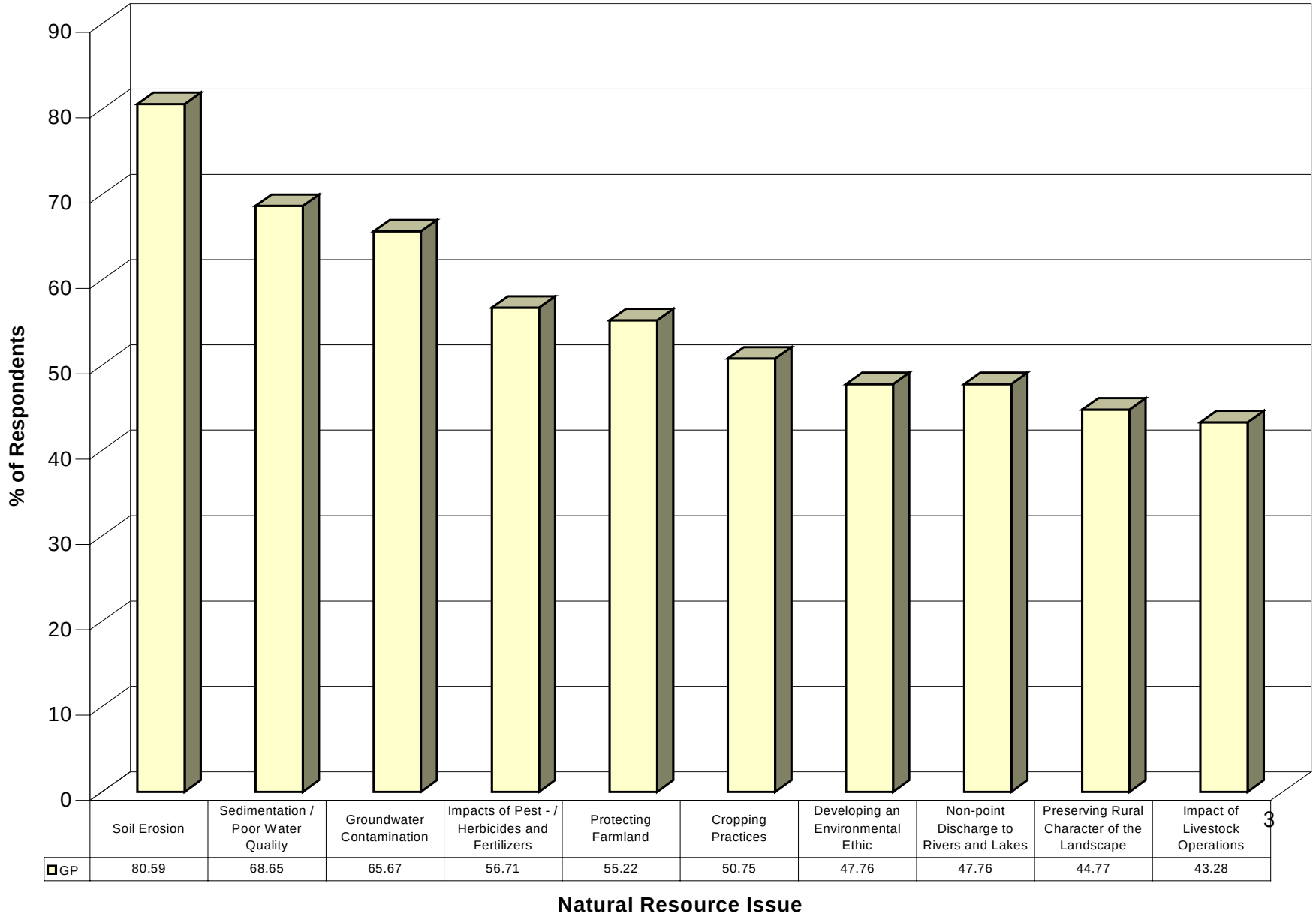
Beginning in the summer of 1999, DNR and University of Wisconsin-Extension (UW-Extension) surveyed citizens living and working in the Grant-Platte Basin to learn what natural resource issues are of concern to them (Chart 1). In fact, many of the same issues were also identified by the public during the development of the land and water resource management plans for Grant and Lafayette counties (Schroedl and Lange, 1999, and Thompson and Lange, 1999). Overall, the major natural resource issues in the basin can be grouped into four main categories: Non-point Source Pollution, Groundwater Contamination, Protecting and Improving Water Quality and In-Stream Habitat and Outdoor Recreation, Wildlife Habitat and Protecting Open Space and Farmland.

Many of these issues interact in cause-and-effect relationships. For example, poor cropping practices can increase soil erosion. Eroded soils act as a non-point source of pollution to rivers and streams and contribute to the problems of sedimentation and poor water quality. Eventually, the effects of this sedimentation and non-point pollution destroy habitat for many aquatic species and decreases opportunities for outdoor recreation (Munroe 2000).

The goal of the State of the Basin Report is to summarize the types of interactions happening in the basin. The next step is to use the information from both the report and from local citizens to identify projects that will address the specific concerns voiced by basin stakeholders. A Grant-Platte/Sugar-Pecatonica (GPSP) Partnership Advisory Board - made up of representatives from various agencies and non-profits including DNR, UW-Extension, County Land Conservation and Zoning Departments, Natural Resource Conservation Service (NRCS), Southwest Wisconsin Regional Planning Commission, Southwest Badger Resource Conservation and Development

Council (Southwest Badger RC&D) and the Nature Conservancy – has formed to direct efforts aimed at addressing these issues.

Chart 1: Top 10 Issues of Concern for Respondents in the Grant-Platte Basin (67)



	Soil Erosion	Sedimentation / Poor Water Quality	Groundwater Contamination	Impacts of Pest - / Herbicides and Fertilizers	Protecting Farmland	Cropping Practices	Developing an Environmental Ethic	Non-point Discharge to Rivers and Lakes	Preserving Rural Character of the Landscape	Impact of Livestock Operations
GP	80.59	68.65	65.67	56.71	55.22	50.75	47.76	47.76	44.77	43.28

Summary of Basin Issues of Concern, Priorities and Recommendations

NON-POINT SOURCE POLLUTION

Priority: The DNR, in partnership with the NRCS, local municipalities, UW-Extension, Grant and Lafayette Counties, local conservation organizations and interested citizens should drastically reduce the amount of non-point pollution, especially soil, pesticides, fertilizers, metals and chemicals that reach streams in the Grant-Platte Basin.

Objective: Install best management practices on the land throughout the basin to reduce non-point source pollution from soil erosion and stormwater runoff. Research and apply for grants, such as the state Targeted Runoff Management Grant (TRM) or federal EQIP programs, to secure funding to encourage the installation of these practices.

Recommendations:

- Farm conservation practices that prevent soil erosion need to be a top priority of all stakeholders in the basin, including:
  - Grant County LCD
  - Lafayette County LCD
  - NRCS – Grant & Lafayette Counties
  - UW-Extension
  - Southwest Badger RC&D
  - DNR
  - Landowners
  - Local Governments

- The DNR will take an active role in promoting efficiencies in the delivery of conservation practices. Encouragement will be given to the sharing of staff between agencies and counties, including:
  - Grant County LCD
  - Lafayette County LCD
  - NRCS – Grant & Lafayette Counties
  - UW-Extension
  - Southwest Badger RC&D
  - DNR
  - University of Wisconsin – Platteville
  - DATCP
  - County Boards

GROUNDWATER CONTAMINATION

Priority: The DNR, in partnership with Southwest Badger RC&D, the UW-Extension, Grant County, Lafayette County and other interested parties and landowners, to improve the quality of groundwater and drinking water in the basin by removing sources of groundwater contamination, increasing public awareness of groundwater and encouraging private well-water testing.

Objective 1: Increase public awareness of groundwater pollution and increase the testing of private water supply wells.

Recommendations:

- Public presentations on well maintenance and construction standards, well owner education, contractor education, and increased private water well testing in the basin should be promoted by the following:
  - Grant County LCD
  - Lafayette County LCD
  - NRCS – Grant & Lafayette Counties
  - UW-Extension
  - Southwest Badger RC&D
  - DNR
  - Central Wisconsin Groundwater Center
  - Wisconsin Rural Water Association
  - Wisconsin Water Well Association
  - Local Governments

- The DNR, in partnership with county agencies, UW-Extension, and the NRCS, should promote well driller education.

Objective 2: Identify potential sources of groundwater and drinking water contamination and remove these sources.

Recommendations:

- Former mining and mine processing sites that are potential pollution sources should be identified for cleanup by the following:
  - Grant County LCD
  - Lafayette County LCD
  - Wisconsin Geological and Natural History Survey
  - Southwest Badger RC&D
  - University of Wisconsin – Platteville

- The DNR, in partnership with UW-Extension and Grant and Lafayette Counties should promote the proper abandonment of unused wells by providing well abandonment demonstrations and financial support.

- The DNR, in partnership with other basin partners, should promote nutrient and pesticide management in the basin in an effort to reduce the amount of groundwater contamination that results from these two sources.

Objective 3: Aid private landowners and communities in properly locating new wells and in designing wells and wellhead protection zones to better ensure safe drinking water supplies.

Recommendation:

- Agency staff will work cooperatively in siting and operation of large animal operations in the basin.

PROTECTING AND IMPROVING WATER QUALITY AND IN-STREAM HABITAT

Priority: The DNR, in partnership with the NRCS, local communities, UW-Extension, Grant and Lafayette Counties, local conservation organizations and interested citizens, should protect high quality waters and improve degraded systems to enable all waters in the basin to support their highest use.

Objective 1: Continue to monitor streams throughout the basin to measure stream health and trends resulting from management and protection.

Recommendations:

- The DNR will implement the baseline monitoring strategy for selected streams in the basin by 2006.

- Monitor select streams to track the status of aquatic organisms listed as state endangered and threatened species and state species of concern.

Objective 2: Protect high quality systems from degradation and restore riparian and in-stream habitat to improve overall water quality and stream health throughout the Grant-Platte Basin.

Recommendations:

- Miles of impaired waters in the basin will be reduced by 10% percent by 2006.

- The DNR will identify 25 miles of warm water sport fishery streams in the Grant-Platte Basin for habitat improvement and stream bank protection, restoration and/or acquisition by 2004.

- The DNR will partner with other governmental agencies, local conservation organizations, and private landowners to protect and/or restore 25 acres per year of riparian wetlands.

- Agencies should identify for cleanup former mining and mine processing sites that are potential pollution sources. (See list of agencies under Groundwater Contamination - Objective 2.)

- Agency staff will work cooperatively in siting and operation of large animal operations in the basin.

- Public health agencies should survey and identify failing on-site waste disposal systems adjacent to streams, particularly Outstanding Resource Waters and Exceptional Resource Waters streams.

- The DNR, in partnership with county agencies, local governments, local conservation organizations and private citizens, should reestablish "native" fisheries in streams with suitable habitat

- The DNR, in partnership with Grant and Lafayette Counties, the NRCS and UW-Extension should encourage soil testing for crop land to encourage the development of nutrient and pesticide management plans.

- Communities that do not already have a stormwater plan or ordinance or a construction site erosion control ordinance in place should develop and enact them.

Objective 3: Provide educational and informational opportunities to local residents for them to learn more about watershed ecology and stream protection and restoration techniques.

Recommendations:

- The DNR will make basin resource information accessible to all interested citizens through public gatherings, participation in stakeholder meetings, newsletters and the World Wide Web. An improved system of data sharing between agencies will be developed.

- Educational efforts will focus on priority basin issues of preventing soil erosion to improve water quality, ensuring the safety of drinking water and managing intensive rotational grazing. The following stakeholders
  UW-Extension
  Local school districts
  Grant & Lafayette LCDs
  NRCS
  DNR

- The DNR and all basin partners should support the activities of the Basin Educator by providing financial and technical aid for activities such as volunteer stream monitoring, pasture improvement projects, the Water Education Library, and basin-wide seminars.

Objective 4: Support and partner with existing and newly forming organizations to encourage land and water conservation efforts.

- All basin partners should assist in the identification, organization, and capacity building efforts of watershed organizations or citizen groups that are allowed to receive and spend funds to further land and water conservation efforts.

- All basin partners should continue to bring a wide-variety of stakeholders together to address natural resource and land-use issues.

OUTDOOR RECREATION, WILDLIFE HABITAT, PROTECTING OPEN SPACE & FARMLAND

Priority: The DNR, in partnership with Southwest Badger RC&D, Southwestern Wisconsin Regional Planning Commission, UW-Extension, Grant County, Lafayette County and other interested parties, should develop more opportunities for natural resources based recreation and wildlife habitat in the Grant-Platte Basin.

Objective 1: Increase water based recreational opportunities in the Grant-Platte Basin.

Recommendations:

- The DNR Water Division should continue efforts to improve the smallmouth bass fishery of southwestern Wisconsin.

- The DNR in partnership with local agencies and non-profit conservation organizations will restore 2 to 3 miles of cold water fishery streams in the basin by 2005.

- The DNR will develop a smallmouth bass management plan for the Grant-Platte Basin by 2004.

- Agencies, non-profit groups and local governments will increase water-based recreational opportunities through activities including purchasing and developing bank fishing and boat access sites.

- The DNR will identify critical habitat sites for stream bank protection or in-stream habitat improvement to restore and enhance sport fisheries in the Grant-Platte Basin.

Objective 2: To increase land based recreational opportunities in the Grant-Platte Basin.

Recommendations:

- The following stakeholders will strive to construct and complete trail segments in the basin including the Pecatonica Trail and the Rountree Trail:
  Friends of Rountree Branch
  Wisconsin Department of Transportation
  DNR
  City of Platteville
  Local Governments
  Grant, Lafayette and Iowa Counties

Objective 3: To increase wildlife habitat in the basin for both game and non-game species, and protect rare plants and vegetative communities through both participation in federal programs and through local or state restoration or protection efforts.

Recommendations:

- Resource agencies and non-profit groups should have the goal of restoration of grasslands to mimic the natural pre-European vegetation of the Driftless Area of Wisconsin for all upland habitat restoration and resource management projects.

- DNR Land Program staff working in partnership with other governmental agencies, private conservation groups and private property owners, should aim to restore 200-300 acres of southern forest and oak savanna in the Grant-Platte Basin by 2006.

- Ecologists from the following agencies and groups will work with private landowners in the Grant-Platte Basin to develop cooperative agreements for stewardship of rare plants on private lands as opportunities arise:
  DNR
  United States Fish and Wildlife Service
  University of Wisconsin-Platteville

- Agencies and non-profits should form a land trust centered on southwest Wisconsin to assure the protection of ecologically important landscape features.

- The following agencies should work to identify and implement Environmental Quality Improvement (EQIP), Conservation Reserve Program (CRP), and Conservation Reserve Enhancement Program (CREP) practices and projects within the Grant-Platte Basin:
  DNR
  NRCS
  Grant and Lafayette County LCDs

- The DNR Forestry staff should continue working with landowners on management of woodlands in the basin.

- The amount of CRP and CREP acreage in the Mississippi River watershed planted in warm season prairie vegetation should be increased by all stakeholders including:
  Grant County LCD
  NRCS
  DNR
  Local landowners

- The DNR should conduct surveys to track the status of terrestrial species, plants, and vegetative communities that are listed as state threatened and endangered species, and state species of concern.

Basin Overview Map

STATE OF THE GRANT-PLATTE BASIN

The Grant-Platte Basin covers 1,032 square miles in the southwest corner of Wisconsin. Although termed the Grant-Platte Basin, the Galena River is also a major river system in the basin. The basin includes Grant County south of Military Ridge, the western quarter of Lafayette County, and the southwest corner of Iowa County. The entire basin is in the driftless area of Wisconsin, a region not covered or scoured by the continental ice sheet during the most recent great glacial age, which ended 10,000 to 12,000 years ago. The terrain varies from gently to moderately rolling, unlike the rest of glaciated Wisconsin. The basin is well dissected by numerous perennial streams and non-perennial drainageways. Local topographic relief is significant and can vary up to 600 feet, resulting in fast-flowing, high gradient streams. The driftless area is also characterized by the lack of natural lakes and few wetlands. Bedrock is close to the surface and often exposed, particularly on valley walls. All of the principal streams in the basin flow directly to the Mississippi River.

BASIN WATER RESOURCES

Surface Waters

There are 81 named streams in the Grant-Platte Basin, with 1,048 total stream miles. Of these, 638 miles are of named streams and 410 miles of smaller streams are not named. 37 miles of waters having excellent water quality and valued fisheries are classified as exceptional resource waters, (ERW). The Galena River and its excellent smallmouth bass fishery in Lafayette County accounts for 35 miles, while the remaining two miles of are the Class I trout waters of Borah Creek in Grant County. There are 70.3 miles of trout (COLD) water streams, 382.9 miles of warm water sport fish (WWSF) community streams and 169.9 miles of warm water forage fish (WWFF) community streams in the basin. Some of the traditionally good smallmouth streams in the basin besides the Galena are the Little Platte and the Sinsinawa River. Numerous aquatic and terrestrial plant and animal species found on the state’s endangered, threatened, or special concern list are found in the basin.

Stream gradients range from low in some headwater areas and near mouths of larger streams, to higher gradients in upper and middle stream reaches. Local gradients and topographical relief cause streams in the basin tend to be very "flashy" which means water levels will increase rapidly after major rainfall or snowmelt events, then fall rapidly back to more normal flow levels. It also means that the streams in the basin are subject to runoff-related non-point source pollution such as stream bank erosion, barnyard runoff, overgrazing of streambanks, and sediment being carried from cultivated fields by runoff. This type of pollution increases the amount of sediment and nutrients in streams and affects in stream habitat, water temperature, and fish spawning and has other adverse effects on stream ecosystem and biological uses.

Runoff has increased in the basin over the last 180 years due to the conversion of the original natural land cover to agricultural land. A study done in the Platte River and Little Platte River watersheds demonstrated that runoff had almost tripled as a result of the conversion to

agricultural land (Knox, 1977). The resulting increase in runoff and flood frequency also increased sediment load that dumped as much as 12 feet of sediment in the floodplain of the lower Platte River. This has also resulted in significant sediment deposition in the Mississippi River. The USGS looked at unit-area loadings (tons per square mile) of sediment and phosphorus in over 50 small watersheds around Wisconsin and reported that unit-area loads from rural watersheds in the Driftless Area are significantly greater than elsewhere in the state (Corsi, et.al., 1997).

One positive trend in the basin was reported in a 1996 report summarizing streamflow characteristics in southwestern Wisconsin's Driftless Area. The study showed that since the 1950s, annual low flows, or base flows, of streams have increased, while annual flood peaks have decreased (Gebert and Krug, 1996). This data shows that streams in southwestern Wisconsin are moving closer to flow conditions that existed at the beginning of European settlement in the basin. Other research concludes that changes in agricultural practices, such as treatment of gullies and conservation tillage that improves infiltration, account for the improved hydrologic regime (Potter, 1991).

Although there are numerous streams and rivers in the basin, there are no natural lakes in the outside of the Mississippi River backwater sloughs.

Wetlands

Due to the topography of the driftless region, the Grant-Platte River Basin does not have extensive wetlands compared with other southern Wisconsin basins. The most extensive wetland complexes are along the Mississippi River with wetlands found along both large and small streams. These riparian wetlands are either floodplain forest wetlands or wet meadows and wet prairies. A large proportion of the riparian wetlands in the basin have been disturbed by agriculture, either through drainage, cultivation, or by being covered with sediment.

While the area of remaining wetlands in the basin is not large, the ecological importance of them is great. They provide vital habitat for terrestrial and aquatic animals, including some on the state's threatened and endangered species list and act to buffer streams. Special efforts are needed to protect and enhance those remaining wetlands in southwestern Wisconsin. Efforts should also be made to restore wetlands that have been drained or cultivated.

Groundwater

Groundwater is the sole source of drinking water in the basin. The basin is located in Wisconsin's driftless area and is characterized by thin soils overlying Ordovician age dolomite or sandstone. The dolomite can be eroded completely in river and stream valleys. Public and private wells draw water from the upper dolomite and sandstone and Cambrian age sandstone. Groundwater is susceptible to contamination from land use activities because the soils are thin and unconsolidated sediments are only present in the stream valleys. The principal threats to groundwater in the basin are from nutrients and pesticides applied on farm fields. Documented problems include:

- Nitrate and bacteriological contamination of wells. This problem is statewide and not specific to the Grant-Platte Basin.
- Nutrients (especially nitrates in water as a result of nutrients) and pesticides.
- Improperly abandoned mine holes and mine airshaft holes that can be direct conduits for contaminants to groundwater.
- Roaster waste piles that may contribute to groundwater contamination.
- Improperly abandoned wells.
- Tin casing in wells, short casing, substandard casing.
- Substandard well issues including: well location with respect to contamination sources, wells subject to flooding such as those in a pit, basement or alcove location.

Atrazine Prohibition Areas

Atrazine, an herbicide used for weed control in corn, has the ability to leach into groundwater and contaminate drinking water. This is a major concern because atrazine can cause health problems for humans if consumed in certain quantities over a lifetime. The state Department of Agriculture, Trade and Consumer Protection (DATCP) has determined certain areas in the state to be atrazine prohibition areas based upon well water sample results and investigations around the well sites. This means that atrazine cannot be used in the areas designated as prohibition areas. The Grant-Platte Basin has three of these areas: one in the Town of Glen Haven between Rattlesnake and Kuenster Creeks; another in the Town of Bloomington, just south east of the Village of Bloomington; the third prohibition area is on the Grant/Iowa County line just northeast of Rewey in the headwaters of the Little Platte River (DATCP).

Potential for Groundwater Contamination due to Non-point Source Pollution

Groundwater contamination potential varies due to ground cover, depth to water table, bedrock and land use. DNR has ranked each watershed in the basin to establish its groundwater contamination potential. This ranking was based on land cover and groundwater sample results found in the state's groundwater database. Since there is very little urban land cover in the basin, the amount of agricultural land and the presence of nitrate or pesticides in groundwater were the main factors that determined the watershed's contamination potential. Table A lists each watershed's score, as well as a short description of the land cover and groundwater sample data that determined the score. A score of 20 to 29 is considered medium and any score above 29 is considered high. All of the watersheds scored greater than 30 indicating that all of the watersheds have a high potential for groundwater contamination.

Wellhead Protection Planning

Wellhead protection planning can be used to protect groundwater. The goal of a wellhead protection plan is to protect public wells from contamination by controlling land use in groundwater recharge areas and in the area around the well. Three communities in the basin have wellhead protection plans. Benton waterworks, serving a population of 900, has a draft wellhead protection ordinance. Both Fennimore and Lancaster, serving 2,378 and 4,192 people respectively, have ordinances in place.

Ensuring a Healthy Drinking Water Supply

Groundwater is an extremely important resource in the basin and one that must be taken care of to insure a safe drinking water supply. It is imperative that the DNR work with the NRCS, county LCDs, UW-Extension, the USGS, conservation organizations and private citizens to identify and remove all threats to their drinking water supply. These threats include improperly abandoned mine holes and mine airshafts, uncapped waste piles, improperly abandoned wells, improperly constructed well, or improperly located wells and animal waste storage units. Partners in the basin should promote driller education, proper well abandonment, frequent well water testing, wellhead protection planning and nutrient and pesticide management.

Table A: Groundwater Contamination Potential in Grant-Platte River Basin

Watershed Name	Score	Comments
Galena River	97	The watershed is 81% agricultural and there is one CAFO[1]. Of 44 samples analyzed for nitrate, 6% exceeded the ES[2] and 54% exceeded the PAL[3]. Pesticides were detected in 3 wells.
Platte River	73	Sixty-two percent of the watershed is agricultural. Of 25 samples analyzed for nitrate, 16% exceeded the ES and 48% exceeded the PAL. Pesticides were detected in 3 wells.
Little Platte	88	Land cover is 75% agriculture. Pesticides have been detected in 12 wells. Ten percent of 37 wells sampled exceeded the ES for nitrate and 48% exceeded the nitrate PAL.
Lower Grant	89	Of 171 wells sampled, 19% exceeded the ES and 61% exceeded the PAL. Land cover is 75% agriculture.
Middle Grant	93	Pesticides were detected in four wells. Of eight wells sampled for nitrate, 25% exceeded the ES and 37% exceeded the PAL. Land cover is 78% agriculture.
Upper Grant	72	70 percent of land cover is agriculture. Pesticides were detected in four wells.
Mississippi River	38	Agriculture makes up 37% of land cover.

Abbreviations include:

1. CAFO: Confined Animal Feeding Operation, which consists of the equivalent of 1000 animal units.
2. ES: Groundwater enforcement standard; NR 140 Wis. Adm. Code. For nitrate the groundwater ES is 10 ppm.
3. PAL: Groundwater Preventive Action Limit; NR 140 Wis. Adm. Code. For nitrate the groundwater PAL is 2 ppm.

WATER QUALITY ISSUES

Non-point Source Pollution

In general, the primary water quality problems in the Grant-Platte Basin are caused by agricultural non-point sources of pollution, hydrologic modifications such as dams, stream straightening, and wetland drainage. Other problems on a more local or site specific basis are caused by mine waste, point sources, or urban non-point sources of pollution such as stormwater runoff and construction site erosion. Sediment coming from croplands and pastures are affecting stream habitat and adjacent wetland complexes. Nutrients in runoff from farm fields, barnyards and urban areas are also considered problems affecting riverine ecosystems in the basin. The

primary water resources problems caused by non-point source pollution in the basin include sediment and nutrient loading to the Mississippi River, specifically to Pool 11, and the loss of in-stream habitat. The loss or alteration of in-stream habitat due to sediment is affecting fisheries in southwestern Wisconsin, particularly the smallmouth bass fishery. Runoff carrying animal wastes from barnyards is believed to be the primary cause of occasional fish kills in some streams in the basin (Wang, 1994). Non-point pollution has affected recreational uses of streams in the basin, particularly sport fishing opportunities. The DNR conducted macroinvertebrate monitoring at 22 sites on 13 streams from 1992-1996 and has monitored additional sites since then. The data indicates that all of the surveyed streams suffered from some stream perturbations due to sediment or nutrient loadings (Marshall, 1999). Soil erosion and sediment delivery to surface waters has been identified as an issue in both state and federal reports and documents. The land and water resource management plans for Grant and Lafayette Counties also identify these issues as being of concern to county residents.

Non-point source pollution abatement projects can help to improve water quality, in-stream habitat, and fisheries. As water quality improves, other recreational uses also become more attractive to users. There is one non-point source priority watershed project currently in the basin, the Lower Grant River. Much of the activity in this watershed project is centered on Rattlesnake Creek. The Galena (Fever) River, one of the first non-point source pollution priority watershed projects in the state, is no longer active. More information on these projects and the watersheds can be found in Volumes 2 through 9 of this report. Currently, the Platte River watershed is designated a federal Environmental Quality Incentives Program (EQIP) project. The Platte River project's focus is reducing the volume of non-point source pollution that enters the Platte River and subsequently, the Mississippi River, through installation of conservation practices on the land.

There are several watersheds and streams in the basin that merit selection as Targeted Runoff Management (TRM) projects or other non-point source pollution abatement projects. The watersheds and streams that are ranked "High" in Table B are considered to be a high priority for a non-point source pollution abatement project including the Galena River, Little Platte River Lower Grant and Upper Grant River watersheds. In addition to these larger watersheds, several smaller sub-watersheds should also be considered for possible NPS project selection, including the Platte River above Annaton Road, Crow Branch, Culver Branch, Lee Branch, Leggett Creek, McPherson Branch and Blake Fork. These watersheds, sub-watersheds and streams are the priority areas in the Grant-Platte River Basin for non-point source pollution abatement projects.

Table B: Rankings for Priority Non-point Source Pollution Abatement Projects

Watershed Name	Watershed Rank	Streams	Small-Scale Projects
Galena River (GP01)	High	Not Ranked	None Identified
Platte River (GP02)	Medium	Medium	Platte River, Crow, Culver, Lee, Legget, McPherson Creeks
Little Platte River (GP03)	High	High	None Identified
Lower Grant River (GP04)	High	Not Ranked	None Identified
Middle Grant River (GP05)	Medium	Medium	Blake Fork
Upper Grant River (GP06)	High	High	None Identified
Mississippi River (GP07)	Low	Low	None Identified

Smallmouth Bass

In the 1960s, this region had what was considered one of the premier smallmouth bass fisheries in the Midwest. During the 1970s and 1980s, however, smallmouth bass populations in most streams declined. The USGS and DNR research staff through investigation of this problem since the 1980s, have found that smallmouth bass population declines or fluctuations seem to be linked to major storm and runoff events. These events carry sediment and nutrients to streams, resulting in significant declines in dissolved oxygen and subsequent fishkills (Graczyk, 1993, Wang et.al., 1996).

Today, it seems the smallmouth bass fishery has made a comeback in the streams in the basin (Kerr, 1998 and Lyons, 2000). Recent monitoring and anecdotal information show that smallmouth bass populations are improving and the smallmouth bass fishery of southwest Wisconsin is now considered as good as it was 25 years ago (Wang, 1996 and Lyons, 2000) and that populations are among the best in Wisconsin (Lyons, 2000). The improvement is attributed to a combination of factors including drier weather resulting in less stormwater runoff, greater public concern, better conservation land management, more aggressive environmental enforcement, and a reduction in farm numbers. The use of rotational grazing, riparian buffers, minimum tillage, and enrolling cropland in CRP also help to improve the fishery through the reduction in runoff, sediment and nutrient loading and flood peaks. Despite this improvement, however, there is still a threat to the smallmouth bass population if good conservation practices such as nutrient and pesticide management and the installation of best management practices do not continue (Lyons, 2001). These measures are extremely important for the continued restoration of southwest Wisconsin's smallmouth bass fishery.

Monitoring

Information about current biological use classification is lacking for about 40% of the total stream miles in the basin and most available data is older than five years. Many of the stream miles not assessed are very small streams that are not actively managed.

Most of the ongoing efforts are focused on sites that will reflect management efforts such as non-point pollution abatement or fish habitat improvement. The DNR has been doing extensive monitoring related to the smallmouth bass issue (Wang et.al. 1994,1996) on a number of streams in the basin. Additional monitoring to assess the effectiveness of managed grazing and grassed riparian buffers (Lyons et.al., 2000) has also been done on streams in the basin. Other monitoring

has focused on Rountree Branch and Snowden Branch (Sims, 2000). Chronic and acute toxicity tests have been done for Rountree Branch, Shullsburg Branch, Coon Branch and the Galena (Fever) River. Several non-agency groups have helped to gather valuable information on streams in the basin through volunteer stream monitoring efforts. Citizens have been monitoring the Little Platte River in two different locations, and one group has been doing work on the Platte River. Volunteer stream monitoring is also conducted on Gregory Branch, Snowden Creek and Rountree Branch.

Special Environmental Problems

There are a couple of issues that pose special environmental problems in the Grant-Platte Basin. These problems include mine wastes and sediment delivery to the Mississippi River.

Many areas in the basin were mined for lead and zinc. These mining operations often left waste piles on the landscape as well as abandoned mine holes and airshafts that have resulted in water quality problems on many streams and groundwater supplies. Two mine waste or "roaster" pile sites near Platteville and New Diggings have been remediated in the basin since 1991. Although these remediations have helped improve the quality of some of the basin's water resources, there are still numerous other mine features on the landscape. Improperly abandoned mines and mine airshafts and mine waste piles have the potential to negatively impact water quality, and pose a threat to public health and safety problems. These remaining sites need to be better identified, and their impacts on resources evaluated.

Significant amounts of sediment are still being delivered to the Mississippi River by the Platte and Grant rivers, causing habitat problems in Pool 11. In addition to this, a Federal study points toward excessive sediment delivery and the associated nutrients as primarily responsible for the hypoxia (oxygen depletion) problem in the Gulf of Mexico. Nutrients, particularly nitrogen, attached to stream-born sediments, primarily from farm fields in the greater Mississippi River basin, results in excessive nutrient loading to the Gulf of Mexico at the mouth of the Mississippi River. The excessive nutrients promote accelerated growth of phytoplankton and zooplankton. Decomposition of dead phytoplankton and other organic material use available oxygen faster than it can be replenished. This results in the severe dissolved oxygen depletion (hypoxia) problem in the upper Gulf of Mexico affecting marine life in the Gulf (EPA, 1999).

Wisconsin's Impaired Waters (303d List)

The Federal Clean Water Act requires states to prepare a list of water bodies or stream segments that are "impaired," or not meeting designated water quality standards. Exceedances of water quality standards, fish consumption advisories and severe habitat degradation are among the reasons streams and lakes have been put on this list. There are over 700 impaired water bodies in the state. This list, which is updated periodically, is used for a number of different purposes. Those uses include identifying potential Total Maximum Daily Load (TMDL) projects, and possible non-point pollution abatement projects, and serve as a basis to receive federal water resources funding. The DNR identifies the causes and sources of the pollutants responsible for the impairments. Pollution reduction plans, called Total Maximum Daily Load (TMDL) plans, are then be developed for each impaired water body in the state over the next fifteen years.

In the Grant-Platte Basin, sixty-one miles on fifteen streams are on the state's impaired waters list (Table C). Most of these streams were added because of habitat impairments resulting from non-point source pollution. A small number of streams are also affected by drainage from old mine waste piles. Another 55 streams and stream segments that have some impairment to water quality and habitat will have priority for restoration projects along with those currently on the 303(d) list. Information on the individual streams in the Grant-Platte on the list can be found in this report's respective watershed narratives.

Table C: Grant-Platte Basin Impaired Waters on the 303(d) List

Stream	Watershed	Impact	Priority Rank	County
Bull Branch	Galena River	Habitat	Med	Lafayette
Chase Creek	Mississippi River	Habitat	Med	Grant
Culver Branch	Platte River	Habitat	Med	Grant
Diggings Creek	Galena River	Habitat, toxics	Med	Lafayette
Hackett Branch	Middle Grant River	Habitat	Med	Grant
Leggett Branch	Platte River	Habitat	Med	Grant
Louisburg Creek	Galena River	Habitat	Med	Grant
Martin Branch	Upper Grant River	Habitat, sediment	Med	Grant
Martinville Creek	Platte River	Habitat	Med	Grant
McPherson Branch	Platte River	Habitat	Med	Grant
Rogers Branch	Upper Grant River	Streambanks, habitat, DO	Med	Grant
Sandy Creek	Mississippi River	Habitat	Med	Grant
Snowden Branch	Little Platte River	Habitat	Med	Grant
Trib. to Shullsburg Branch	Galena River	Habitat, toxics	Med	Lafayette
Whig Branch	Little Platte River	Habitat	Med	Grant

BASIN LAND RESOURCES

> *The view from this mound…beggars all description. An ocean of prairie surrounds the spectator whose vision is not limited to less than thirty or forty miles. This great sea of verdure is interspersed with delightfully varying undulations, like the vast waves of the ocean, and every here and there, sinking in the hollows or cresting the swells, appear spots of trees, as if planted by the hand of art for the purpose of ornamenting this naturally splendid scene.*

This is the description of the native landscape of southwest Wisconsin as it appeared to W. R. Smith in 1837 from on top of Belmont Mound between Platteville and Belmont (Curtis, 1959). If one were to stand on Belmont Mound today, the undulating nature of the landscape remains, but the prairie has been replaced by contoured farm fields, pastures and farmsteads.

Two other early descriptions of the landscape and nature of the Grant-Platte Basin come from Lucius Lyons, one of the United States land surveyors of this area in the 1830s. The first description is of a part of the Town of Hazel Green in Grant County.

> *About one-third, including the south part of the township of which the foregoing are the field notes, is rolling, second rate land, thinly timbered with thinly timbered white, bur, and black oak; the remaining two-thirds is generally rolling, 1st rate prairie.* (Crossley, 2000)

Finally, about a part of the Town of Wyalusing the surveyor writes:

> *Except the river bottom which is low level wet and not fit for cultivation, well-timbered with oak, maple, ash and elm, the upland is thinly timbered with white, black and bur oak and some hickory undergrowth.* (Crossley, 2000).

The Grant-Platte Basin exhibits characteristics of two ecological landscapes; the Southwest Savanna and the Western Coulees and Ridges regions (Albert, 1994, and Omernik and Gallant, 1988). The Southwest Savanna is characterized by ridges and valleys, shallow soil and high gradient streams. The Western Coulees and Ridges region of the basin lies mostly along the Mississippi River and is characterized by highly eroded driftless topography, relatively extensive forested landscape and big rivers with wide river valleys. Talus slopes can be found along the bluffs of the Mississippi.

The vegetation communities of the basin prior to European settlement were primarily tall grass prairie and oak savanna on the broad ridge tops. Brush or shrub savannas were also common. Deciduous forests covered the slopes and much of the river bottomlands. It is estimated that deciduous forests covered 70% of the Platte and Little Platte watersheds in the early 1830's. The remaining 30% was covered by prairie and oak savanna (Knox, 1977). John T. Curtis estimated that the vegetation in southwestern Wisconsin was a mixture of true forest, open oak forest (oak savannas with light stocking of trees and a grass understory), and true tall grass prairie, (40%, 40% and 20% respectively). The native tall grass prairie and oak savanna with its deep root system and the wooded slopes promoted infiltration of meltwater and rainwater, while keeping the native soils in place. The infiltrated runoff provided a stable base flow for streams in the region.

The pre-settlement landscape of the Grant-Platte Basin was greatly influenced by fire occurrence. These fires, both natural and Native American set, were the controlling force on the maintenance of the prairie-hardwood floristic province described by Curtis (1959). These fires maintained the early successionary vegetation (prairie grasses and oak forest types) throughout the basin (Amiel, 2000). European settlement resulted in breaking up the prairies, eliminating fire suppression of shrubs and trees, and replacing much of the forested areas with cultivated fields and pastures. The combination of these factors, particularly land cultivation, has resulted in reduced soil infiltration capacity (Knox, 1977).

The native soil associations of the region reflect the original vegetative cover and underlying bedrock. The soils are wind blown loess over limestone and/or sandstone. Soil depth is variable, from very shallow (<6") to moderately deep (>60"). Soil fertility is good to very good (Amiel, 2000). These soils are the types that form under prairies, savannas and southern mesic and xeric

forests (Hole, 1976). Tama, Ashdale, Downs and Muscatine soils are generally found on the ridgetops. Palsgrove, Dubuque and Fayette soils association is the predominant one of the hillsides and valleys. Soil erosion rates were extremely high during the first half of the 20th century due to the slopes of the land and the early farming practices. However, adoption of modern soil conservation practices have reduced soil erosion rates over the past 50 years. In addition to conservation techniques such as whole farm conservation plans, contour plowing, strip cropping and grassed waterways, recent federal conservation programs have encouraged farmers to set aside or not actively farm some of the more marginal land.

Today, only a fraction of the original vegetation that once covered much of the basin remains. The natural vegetation communities that existed at European settlement have mostly disappeared. The remnants of native prairie vegetation remaining today are not necessarily typical of what existed 180 years ago. These remnants often occur on sites which were judged undesirable for agriculture (Lange, 1990), or, in the case of Ipswich Prairie, are along an uncultivated railroad right-of-way. There are some remnant areas of hardwood forest remaining in the basin, often found on the steeper slopes where cultivation is impractical. Relic mixed white pine and hardwood forests occur on steeper slopes (Albert, 1994).

The combination of settlement and agriculture has altered the animal communities that existed before settlement. For example, deer and coyote are present, but other large herbivores and carnivores such as bison and cougar have disappeared (Addis et.al., 1995). Despite this, the land still provides habitat for a fairly diverse wildlife community. Deer, grassland birds, upland game birds, and others are hunted in the basin. Many non-game species exist, with some thriving. DNR wildlife specialists, with Fish and Wildlife Service, NRCS and county LCD staff, work with willing landowners to assist them in developing, maintaining and improving habitat. In addition, the Federal Conservation Reserve Program (CRP), Environmental Quality Incentive Program (EQIP), and Wetland Reserve Program (WRP) have all helped to improve wildlife habitat on private property.

The Southwest Savanna Ecological Landscape region of Wisconsin, in which the Grant-Platte Basin is located, is considered to have some of the best overall habitat and management potential for upland grassland bird species in the state (Sample and Mossman, 1997). This is because of the amount of pasture land and CRP lands in the basin that function as surrogate grasslands and prairie for many native species. Approximately 6% of the basin, about 62 square miles, is currently grassland, based on analysis of remote sensing imagery. The growing acceptance of rotational grazing by local farmers has the side benefit of providing additional or improved surrogate habitat. The DNR publications Wisconsin's Biodiversity as a Management Issue (Addis et.al., 1995) and Managing Habitat for Grassland Birds (Sample and Mossman, 1997) provide general recommendations for management and educational activities compatible with the ecosystems which existed in southwest Wisconsin prior to European settlement. These recommendations should be considered when individuals or governmental agencies are involved in natural resource restoration activities.

There are only three State Natural Areas in the basin, Ipswich Prairie, Hardscrabble Natural Area and Dewey Heights Prairie, that can give us a small glimpse of what this part of Wisconsin might

have looked like in 1820. Ipswich Prairie is the only remaining remnant of the deep soil mesic prairie which was prevalent in southwestern Wisconsin 180 years ago. Dewey Prairie is a large dry lime prairie on the bluffs above the Mississippi River.

WILDLIFE MANAGEMENT AND FORESTRY

The primary DNR wildlife management emphasis in the Grant-Platte Basin is on establishing grass nesting cover for upland birds. The DNR is working with the NRCS and the Grant and Lafayette counties LCDs, local landowners, and the Southwest Wisconsin chapter of Wings Over Wisconsin to develop nesting cover. Warm season prairie grasses are being planted on fields enrolled in the federal Conservation Reserve Program (CRP). The DNR in cooperation with the local Wings Over Wisconsin chapter has an active food plot seed program in the basin (Brandt, 1999).

Wildlife Management Trends

Wildlife habitat loss and habitat fragmentation are the main concerns for wildlife management in the Grant-Platte Basin. Urbanization, breaking farms into smaller parcels, building homes in woodlots, overgrazing woodlots and pastures, all affect wildlife habitat and ecology.

There are a variety of things that can happen to wildlife because of urbanization and fragmentation of the rural landscape. Wildlife species that are generalists or well adapted to humans such as deer, red-wing blackbirds, robins, or coyotes can do fine in urbanizing or fragmented landscapes. Species that are specialists or need larger blocks of land for their survival will not do well in fragmented landscapes. Some examples of these species are upland sandpipers, dickcissels, harriers, and western meadowlarks (Crossley, 2000).

It has become increasingly important for wildlife mangers to work with private landowners to restore wildlife habitat. This is needed to improve populations and diversity of all types of wildlife, game and non-game species alike. Prairie restoration, intensive rotational grazing, and woodlot management are some of the activities promoted to improve habitat.

Hunting

Hunting is a major recreational activity in the basin. Deer, pheasant and turkey are the primary game species in the basin. DNR Wildlife Management staff are trying to improve and increase wildlife habitat, particularly for upland birds, in the basin by working with local conservation groups and landowners. This is becoming more of a challenge in the face of increasing rural development and the increased restricting of hunting access by private landowners. Restricted access to private lands is becoming a problem since there is a lack of public hunting and fishing areas in the basin to compensate for the loss. This affects efforts to adequately manage various game species.

Waterfowl hunting can be good in the Upper Mississippi River National Wildlife Refuge and in the bottomland reaches of the lower Grant and Platte Rivers. A variety of waterfowl and other bird species use the wetland complexes along the Mississippi River bottoms. The North American Waterfowl Management Plan recognizes the Mississippi River as one of the 34 most

important and critical waterfowl habitat areas in North America. The Upper Mississippi River Great Lakes Region Joint Venture Plan (WDNR, 1992) identifies the lower reaches of the Grant and Platte Rivers as important areas for management actions to benefit waterfowl.

There are two turkey management zones in the basin. The establishment of a self-sustaining wild turkey population in southwestern Wisconsin has been very successful, particularly near the Mississippi River.

Parts of four Deer Management Units are in the Grant-Platte Basin. The overwinter population estimates for deer in the basin in the 1999-2000 winter ranged between 21-39 deer per square mile of deer range. The DNR overwinter goal for those management units is 20 deer per square mile of deer range (Crossley, 2000).

The Stewardship Program

The 1999 Wisconsin Legislature re-authorized the Stewardship Fund. It will provide over $400 million dollars over a 10-year period for conservation land acquisition, acquisition and development of public lands, and local conservation aids. Some of the Stewardship project categories that make funds available for water and land resources related purposes are:

1. Conservation Land Acquisition, providing funds to help complete existing state park, forest, wildlife and fishery projects

2. Habitat Restoration Program, which helps to restore wildlife and fish habitat lost to development and agriculture

3. Streambank Protection, which improves and protect surface waters and fisheries habitat

4. Urban Greenspace, which provides grants to assist local units of government in purchasing land or acquiring land rights to provide open space in urban areas

The Stewardship Program will provide the state and local units of government and landowners in the basin the opportunity to protect and restore land and water resources.

Forestry

The pre-settlement woody vegetation of the Grant-Platte Basin was primarily open oak and savanna grassland, with oak dominated mixed deciduous forests on the steeper slopes and bottomlands areas. Settlement of the area altered the landscape and eliminated or fragmented the forests.

The forest acreage of the Grant-Platte Basin has increased from the lows of the early 1950's. While there is no precise breakdown of forested acreage by basin, Grant and Lafayette counties are estimated to have about 135, 000 acres of forest today (Wisconsin Forest Statistics, 1996). Most of this increase in forest acreage can be attributed to the idling of pastures and small farm

fields. Today, the forest acreage of oak-hickory forest is nearly equal to that of maple-ash-basswood forest. The loss of natural fires on the landscape, light selective harvest by landowners and loggers, and other influences have promoted a transition of the forest in the basin from oak-hickory dominated forest to one composed of far more shade tolerant forest species, such as the sugar maple-white ash-basswood forest type. Lack of natural fires encouraged brush and other tree growth to occur in the oak savanna areas not cleared and cultivated, turning them into oak and mixed hardwood woodlots (Lange, 1990). Studies by Kotar and others predict that the forest of southern Wisconsin will continue the shift from an oak-hickory dominated forest type to the more shade tolerant maple-ash-basswood forest type (Amiel, 2000).

The most important forestry issue in the basin is the steady loss of oak timber type (Hollingsworth, 1999). Once an area is cut over, oaks are at a disadvantage to reestablish themselves. Other faster growing trees such as maples can out-compete oaks. This has a wildlife impact as many of the wildlife species depend on acorns as a major food source. As the oaks dwindle in numbers, the species utilizing the acorns will either decrease or make greater use of crops in adjacent fields to make up the difference. Another adverse impact to the area resulting from a decline in oaks is economic. Local sawmills have oak as their main source of income. The sawmills will adjust their cutting and marketing to other timber types as the oak becomes less available. The market for other timber is not as lucrative as oak and it is possible some operations will either move from the area or go out of business. The DNR, local LCDs, the federal NRCS and the Farm Services Administration, and the Southwest Badger Resource Conservation and Development agency are all working with willing local property owners to maintain and increase oak timber type in the basin.

Another important forestry issue in the basin is the splitting or division of farms. The smaller parcels are often used for recreational purposes (Hollingsworth, Singer, 1999). The fragmentation of the farm also leads to fragmentation of range needed by various types of wildlife to survive. Often, the new owners are not interested in, or not aware of, the benefits of woodland management.

A third forestry issue in the basin is the grazing of woodlots by cattle, hogs and sheep (Hollingsworth, 1999). Woodlot grazing reduces the supply of acorns and kills the oak saplings. Grazing of woodlots also results in significant erosion of soils from the woodlots and increased runoff as the animals compact the soil limiting infiltration. Increased landowner participation in whole farm management plans and financial incentives offered by federal and state programs can, and has in some areas, reduced this problem. This problem has been exacerbated by new legislation affecting how agricultural land is assessed for property tax purposes. Woodlots that are not pastured are assessed at a higher rate than are pastured woodlots. This tax incentive to pasture will have an adverse effect on the ecological health of woodlots in southwest Wisconsin.

There are a number of different programs to assist landowners in managing their woodlots. The DNR has county foresters in both Grant and Lafayette counties. The county foresters can assist landowners in woodlot management needs. Good woodlot management can improve habitat for game and non-game species, particularly those that need habitat management assistance in order to maintain or increase populations.

RECREATION

There are a wide variety of activities and recreational opportunities in the basin. Healthy rivers and streams and abundant good quality habitat for all types of wildlife can help to increase these opportunities and strengthen the tourism industry in the basin. Increased tourism and more and better marketing of current opportunities can be of great benefit to local residents and landowners as a result of increased economic opportunities. Through the development of these recreational opportunities, tourism can become an important component of the local economy.

Fishing

The primary water-based recreation in the Grant-Platte Basin is sport fishing. Smallmouth bass and trout are the primary sport fish in the basin. Improved public access to the good smallmouth bass streams is needed to better utilize this recreational resource.

There are over 70 miles of trout streams in the basin. The premier trout stream in the basin is Borah Creek, a Class I trout stream with a healthy reproducing population of brown trout. Other listed trout streams in the basin include the upper reach of the Platte River, Austin Branch, Crow Branch, Leggett Creek, the Little Grant River, and a reach of the Little Platte River (WDNR, 1980). The DNR, in partnership with the local chapter of Trout Unlimited, has embarked on a project to improve water quality and habitat in McPherson Branch, a tributary to the Platte River. The Friends of Rountree Branch are planning a stream improvement project to establish a brown trout fishery in one reach of Rountree Branch at Platteville.

The lower reaches of the Platte and Grant Rivers provide a warm water fishery. Continued improvement in land management practices coupled with in-stream habitat improvement, bass stocking and promotion could once again make this area a destination for smallmouth bass anglers. The state owns or leases land for public access to some streams in the basin including: Borah Creek, Martin Branch, the Galena (Fever) River, Little Platte River, Shullsburg Branch, McPherson Branch and the Little Grant River.

Mississippi River

The Mississippi River and the Upper Mississippi River National Wildlife Refuge are major recreational destinations for people in the region. The Mississippi River Flyway is a major route for many migratory birds during spring and fall migrations. The two Wisconsin State Parks in the basin, Wyalusing and Nelson Dewey State Parks, offer recreation enthusiasts access to the Mississippi. Two impoundments on the river, pools 10 and 11, offer recreational boating, fishing, hunting, and birding. These activities have been affected over the years by the significant sediment deposition from the Grant River and the Platte River systems. The states of Wisconsin, Iowa and Minnesota have been working with the U.S. Fish and Wildlife Service and the Corps of Engineers to address these problems.

Canoeing

Canoeing is one recreational activity which the larger rivers in the basin, the Platte, Grant, and Galena, are able to support. These rivers provide over 100 miles of unobstructed water for

canoeing. Canoeing is an example of one recreational water use that needs to be more closely examined for its economic potential to the basin. Both the Platte and the Grant Rivers are listed as canoe streams in some Wisconsin tourism information sources. If this form of recreation can be expanded and linked to other basin attractions, it could draw greater local and regional attention to water resources and add to the local economy. In addition, it could be linked to other resource based recreational activities such as bicycling or camping to increase interest in tourism in the basin and the southwest corner of the state.

Camping

Camping opportunities are present in the Grant-Platte Basin. There are two state parks providing camping and other recreational opportunities, Nelson Dewey State Park near Cassville and Wyalusing State Park north of Bagley. These state parks offer excellent opportunities for hiking, nature study, boating and general relaxation. The U.S. Army Corps of Engineers operates a campground south of Potosi on the Mississippi River. The City of Platteville's Moundview Park also offers opportunities for camping as well. The campground has a short walking trail and is located near Rountree Branch. In addition, there are several private campgrounds in the basin offer recreational opportunities.

Biking

In addition to the state parks, the Pecatonica State Trail runs from Platteville to the community of Calamine in Lafayette County. Currently, the trail from Calamine to Belmont in Lafayette County is open. The link between Platteville and Belmont is being developed. The scenic back roads in the basin, however, could provide bikers rewarding challenges as well as provide an opportunity to enjoy the rural landscape of southwest Wisconsin.

EDUCATION IN THE BASIN

To effectively address and improve upon problems in a watershed, it takes more than monitoring and habitat improvement. It also takes an overall awareness and understanding of natural resource issues by stakeholders. During 1998 seven UW-Extension Basin Educators were hired to provide natural resources-related information and education to local areas in order to promote this need for awareness and understanding. The program has since expanded to include 15 Basin Educators covering all 23 of Wisconsin's major river basins. The Basin Educator program is the product of a collaboration among UW-Extension, the DNR, USDA NRCS and the US Environmental Protection Agency.

The Basin Educator works out of the Lancaster Agricultural Research Station and works in both the Grant-Platte and the Sugar-Pecatonica Basins. The Basin Educator has worked to develop educational programs and projects in answer to local needs and issues. These programs and projects have required close collaboration and cooperation with county, basin and state conservation staff (DNR, NRCS, LCD), conservation and natural resource organizations, teachers, farmers and other landowners. Several of the recent and ongoing projects are described below.

Water Education Library

In 1998 a committee was formed to establish a Water Education Library (WEL) for Southwest Wisconsin. The WEL is currently housed at the Agricultural Research Station west of Lancaster. During 1999 the WEL Committee, made up of county conservation staff, conservation organization, teachers and citizens, worked to raise funds, purchase equipment and set up the library. Much of the equipment and other resources for the WEL have been purchased through grants, donations from community organizations and agency funds.

The equipment available includes chemical test kits for dissolved oxygen, nitrate, phosphate and pH, hip boots and chest waders, thermometers, magnifying lenses, nets, soil probes, soil erosion demonstration trays, groundwater and biotic index posters, a groundwater model, videos, cassette tapes and equipment needed for storm drain stenciling. The equipment and resources are available for free to any teachers, youth group leaders or citizens interested in setting up stream monitoring projects or learning more about water quality. During it's first full year of operation, 356 youth and 68 adults used the equipment or benefited from an educational activity that used resources from the WEL.

Citizen Stream Monitoring

During the year 2000, the Basin Educator teamed up with the Harry and Laura Nohr Chapter of Trout Unlimited (TU) to co-host a stream monitoring workshop on the Big Green River near Fennimore. Using equipment provided by the WEL, fourteen area teachers and citizens participated in training sessions for monitoring stream temperature, turbidity, biotic index, dissolved oxygen, and habitat assessment. After the training, participants took the equipment home and began individual stream monitoring activities. A Beginner Level Stream Monitoring training will be offered each year (or as needed) and a more advanced level training is being developed.

Many current stream monitors got together with others interested in learning more about water quality and citizen monitoring for the first annual Water Celebration. The Celebration was held Saturday, November 11, in Richland Center and was sponsored by the Nohr Chapter of TU, UW-Extension and the Valley Stewardship Network, an organization from the Kickapoo Watershed. Total attendance numbered over 70. Fifth and sixth graders from three school groups presented their water quality monitoring data, members of watershed organizations shared ideas, and all participants had the opportunity to attend fun and educational sessions including *Changing Land Use Effects on Water Quality, Incorporating Water Quality Studies into the Classroom, Birding in the Riparian Zone, Macroinvertebrates as Indicators of Water Quality, Fish Printing, Fly Tying* and others. It was a day of sharing, networking and fun for all who attended.

Currently, there are several citizen stream monitoring projects in the Grant-Platte Basin. These projects are scattered throughout three watersheds in the basin and focus on the following streams:

- Snowden Creek in the Little Platte River Watershed
- Little Platte River at Maple Ridge Road in the Little Platte River Watershed
- Little Platte River at the bridge near Arthur in the Little Platte River Watershed
- Rountree Branch in the Little Platte River Watershed

- Platte River downstream from Rock Church in the Platte River Watershed
- Gregory Branch in the Upper Grant River Watershed

For more information and to see the data collected by these stream monitors, see the Trout Unlimited website. To get involved in citizen stream monitoring projects, contact the Basin Educator for the Grant-Platte Basin.

Pasture Improvement Projects

Healthy pastures have implications to both local natural resources as well as individual producers. Sod covered soils allow very little sediment to run-off into local streams. In addition, healthy, productive pastures can be a real asset on farms. In 1999, the Basin Educator, working with county Agriculture Extension Educators received a Multi-Agency Land and Water Education Grant of nearly $20,000 to establish pasture improvement plots on 12 farms in southwest Wisconsin. Kura clover and ryegrass plots were planted on three farms in each of Grant, Iowa, Lafayette and Crawford Counties in the spring of 2000. The project will record stand density and forage quality. Pasture walks were held to help increase awareness of the project and the importance of healthy pastures. More than 85 people attended these walks held at 4 of the 12 locations during 2000. There are plans to host additional educational programs at these sites during 2001.

Pastures adjacent streams need special attention to insure that grazing does not harm the riparian area. A riparian pasture management demonstration site, funded through a 2000 Multi-Agency Land and Water Education Grant, was established at the Lancaster Agricultural Research Station to address riparian grazing management issues. The funds have already been used to construct a gravel stream crossing. Additional project activities will include the production and distribution of a project report describing the installation of a gravel stream crossing and the installation of a demonstration site to show watering systems for riparian pastures.

Basin Seminar

A Grant-Platte/Sugar-Pecatonica Basin Seminar was held on July 13 for conservation agency professionals in these basins. The seminar was planned and co-sponsored by the DNR and UW-Extension. Session topics included: Working Effectively with Legislators, Human Impacts on Stream Channels, Effectiveness of BMPs, Land Use Changes and How They Affect Water Quality, An Update on the New Performance Standards, Grant Opportunities, Carbon Sequestration, and Invasive Plants. Participants representing four counties within the basin attended and participant evaluations suggested that attendees found the seminar useful. Plans for future Basin Seminars include expanding the topics and audience to encourage citizen participation rather than focusing solely on agency staff.

AGRICULTURE IN THE BASIN

The dominant land use in the Grant-Platte Basin is agriculture and estimates based on remote sensing imagery determine that nearly 70% of the basin's surface area is cultivated. Of this 70%,

the most dominant forms of agriculture in the basin are dairying, cash cropping and livestock feeder operations. According to the 1999 Wisconsin Agricultural Statistics (WDATCP, 1999), Grant County ranked number one in the state in the amount of land in farms, first in overall forage production, alfalfa hay production, and in total numbers of cattle and hogs. Grant County ranked third in oats production and corn for grain production, fourth in total milk production, eighth in corn for silage, seventh for soybean production, and tenth for barley production in the state. Lafayette County ranked sixth in corn for grain production, fourth for soybean production and for total number of hogs and pigs. The market value of agricultural products sold increased 10% in Grant County and 4 % in Lafayette between 1992 and 1997. The county production numbers and rankings point out the importance of farming to the local economy. These number can also indicate the potential for non-point sources of pollution to be a problem affecting virtually all streams in the basin.

There has been a trend nationally, statewide and in the basin toward fewer farms and farms of larger size. This is coupled in at least some parts of the state with a shift from small-scale livestock and dairying to large-scale animal operations and cash crop farming, particularly corn and soybeans. This type of change often results in contour strips being removed to accommodate the large equipment normally used in these types of operations. This trend may lead to increasing field erosion unless sufficient appropriate conservation methods are employed by operators and owners. Much of the water quality gains and stream baseflow gains of the last 20 years could be undone if this shift in agricultural practices is not accompanied by increased attention to keeping soil on the land and protecting streams and wetlands in the basin.

According to the USDA 1997 Census of Agriculture, farm acreage in Grant and Lafayette Counties declined 4% between 1992 and 1997. The number of full time farms in the two counties also declined 16% over the same period. While the total number of farm animals in the basin has declined over the last 20 years, concentration of animals in a given location have become greater (Lieurance, 1998). In addition, a number of large-scale animal operations have been proposed in the basin. These types of facilities are called confined animal feeding operations, or CAFOs, and require a permit. Currently, there is only one permitted CAFO in the basin. The location of such operations is very important from a water quality perspective. Proper design and location of manure storage and handling facilities, manure land application plans and nutrient management plans, and location of feedlots are critical to the protection of both groundwater and surface water quality. The unglaciated ridge and valley terrain of this basin fosters rapid runoff. This makes surface waters more susceptible to pollution problems from manure and nutrient runoff due to poor land or operations management practices, poorly sited facilities, and poor maintenance of facilities.

A secondary trend, which seemingly is opposite the trend toward fewer and larger farms, is the splitting or division of individual farms. Often, these farm splits are purchased by individuals more interested in using the land for recreational purposes. Many of the new property owners are out of state individuals who only visit the property infrequently (Singer, 1999).

Another concern posed by agricultural activities is the use of nitrogen based fertilizers. Wide spread use over time is linked to nitrate levels above state enforcement standards in 23% of

private water supply wells in the Rattlesnake Creek sub-watershed (University of Wisconsin, 1989). The Lafayette and Grant County LCDs, along with the NRCS, the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the UW-Extension service are trying to address this problem through farm nutrient management planning, promoting increased testing of private wells, and education. Atrazine, a corn and soybean pesticide, has also been found in groundwater at levels of concern in some parts of the basin. DATCP has identified three atrazine use prohibition areas in the basin.

Groundwater problems may occur in areas where bedrock is close to the land's surface and in areas where old zinc, lead and copper mines once operated in the basin. There are thousands of mine exploration drill holes and airshafts associated with the historic mining activities that have not been properly sealed in the basin (Webber, 2000). These could act as conduits for pollutants to groundwater and drinking water aquifers. These issues are especially improtant when siting and approving any large scale animal or CAFO operation in the basin. In addition to animal operations, the intense cash cropping that occurs in some parts of the basin also has the potential to adversely affect local groundwater through increased fertilizer and pesticide use and the potential for infiltration into local groundwater. Ongoing groundwater monitoring should continue to more accurately discern groundwater quality trends in the basin.

Natural Resource Protection Efforts

The good news is that many farm owners in the Grant-Platte Basin are actively involved with conservation management practices on their farms. They are assisted by staff from the LCDs of Grant and Lafayette Counties, and from the local NRCS office. They employ various programs to conserve the soil on their farms. Among theses programs are the state's Priority Watershed Program and the Federal Conservation Reserve Program (CRP). The CRP program, recently reauthorized by Congress, allows payments to farm owners not cultivating fields that are more susceptible to erosion. While no quantitative studies have been done to look at the relationship of CRP enrollment acreage to water quality improvement, observations by county and state staff involved in soil and water resources protection and management indicate that streams which have a high percentage of adjacent agricultural land in CRP generally have improved water quality, and in-stream and riparian habitat.

Two **B**est **M**anagement **P**ractices (BMPs) are gathering a lot of interest both nationally and in Wisconsin. They are **no** or **minimum tillage** and **intensive rotational grazing**. Both BMPs keep more soil on the land, protect surface waters from pollutants, and promote infiltration of surface runoff into local groundwater, while still providing the farmer with economic benefits. Currently the UW-Madison's Agricultural Research Station near Lancaster is conducting research work on conservation practices such as rotational grazing.

Rotational grazing, sometimes referred to as managed grazing, divides the old pasture into a number of different paddocks. Animals are permitted to graze these paddocks for a short time before being moved to a new paddock. This allows paddock vegetation to rest and regrow prior to another grazing rotation. This method can reduce the farmer's dependency on purchasing or growing feed as well as providing his animals with high quality forage. Rotational grazing has been shown beneficial for the improved reproduction of some upland birds (Paine, et.al, 1998).

Rotational grazing also has promise as a BMP for protecting streams. Rotational grazing rather than continuous grazing avoids overgrazing adjacent streams and promotes a healthy grassy turf. This in turn helps to stabilize stream banks and minimize erosion protecting water quality and in-stream habitat (Lyons, et.al., 2000). The number of dairy farms employing intensive rotational grazing is increasing in the state. Recent research indicates about 20% of dairy farmers in the state are using rotational grazing. It is estimated that 20-30% of the dairy farmers in Grant County, 10-20% in Lafayette County and over 30% in Iowa County are involved in rotational grazing. The research also indicated that using intensive rotational grazing can benefit the farmer by realizing significant labor savings, higher net farm income per cow, lower levels of investments per cow and improved quality of life (Ostrom and Jackson-Smith, 2000). No-till and minimum tillage practices leaves considerably more residue on the ground surface than conventional tillage and helps to keep soil in place. Both can provide economic advantages for farmers and help to protect water quality, fisheries and in-stream habitat.

Another important best management practice for protecting streams is the use of **riparian stream buffers**. These are areas immediately adjacent to streams that are not cultivated and exclude animals. Research in Wisconsin and elsewhere has shown that agricultural practices within 10 to 30 meter (30-100 foot) of the stream can affect the composition of the in-stream macroinvertebrate community. This research also indicated that buffers can protect both the macroinvertebrate and fish communities in a stream (Stewart et.al., 2000). Buffers have been demonstrated as being very successful in reducing sediment loading to streams in studies done in Iowa and North Carolina and elsewhere. Another benefit of riparian stream buffers, minimum tillage and rotatioanl grazing is that all three can provide additional habitat for animals and grassland birds. An excellent recent report by Sample and Mossman goes into more detail on managing habitat for grassland birds (Sample and Mossman, 1997).

In 1997 the NRCS, in partnership with county LCDs, local land owners and the DNR, initiated a new program, the Environmental Quality Incentive Program (EQIP). This program provides money for agricultural land with serious resource problems. The dollars may be used for installation of certain BMPs that will better protect surface water and groundwater. EQIP projects target certain watersheds or subwatersheds. A team of county, state and federal resource managers evaluate what watersheds and parts of watersheds would benefit from such a project. Property owners in those watersheds selected for an EQIP project are contacted by local county LCD staff and encouraged to participate by offering cost sharing for the installation of non-point source best management practices (BMP's) which protect surface waters and keep the soil on the land. The Platte River watershed has been selected as an EQIP project in the Grant-Platte Basin.

Wisconsin Ag Stewardship Initiative

BMP’s, when properly implemented, have been shown to not only have a positive effect on surface water quality, but have also helped producers and landowners meet non-point pollution standards. Today, more than ever, producers are looking for ways to farm in an environmentally conscientious way.

The University of Wisconsin-Platteville Farm, located just south east of Platteville in the headwaters of the Galena River, is the location of state efforts to study soils, crops, livestock,

water, weather, air, economic, environmental and social impact from a systems perspective. The farm, known as the Pioneer Ag Stewardship Farm, (PASF), will help investigators look at the flow of nutrients through a whole farm using real-world applications, observing how those applications affect the environment, economics and social perceptions. The main goals of the PASF are to:

- Increase producer awareness of environmental best management practices
- Increase producer confidence in environmental regulations and guidelines
- Offer science-based data to be used for formulating future agricultural environmental regulations and/or guidelines
- Help farmers understand the economic impact of following environmental regulations and guidelines
- Improve and protect the environment, while reducing nutrient losses
- Understand the farming system's effect on the environment

URBAN AREAS IN THE BASIN

Platteville is the largest municipality in the basin with a 1997 estimated population of just over 10,000 based on Wisconsin Department of Administration population data. Platteville is the site of the University of Wisconsin-Platteville, the only public or private four-year university or college in the southwestern Wisconsin. Other municipalities in the basin and their estimated 1997 populations include Lancaster (4,239), Fennimore (2,481), Cuba City (2,038) and Shullsburg (1,260). Population growth rates for all the municipalities and counties in the basin are very low when compared with the rest of southern Wisconsin. This translates in a very small acreage of land being developed each year, particularly when compared with Washington or Waukesha counties, two of the fastest growing counties in the state. Due to this small growth, construction site erosion and stormwater management are not problems of the magnitude they are in more rapidly urbanizing areas of the state. Despite this, however, construction site erosion and poor stormwater management can still have a negative impact on area surface water.

Despite the slow growth in municipalities in the basin, communities are looking to plan for future growth. As required by the recently passed *Smart Growth Legislation,* communities in the Grant-Platte Basin will have to produce a new land-use plan, incorporating many different aspects of land use, including preservation of cultural and natural land resources. Some communities in the have already sought funding to help them get started with this planning effort and several of them are working together to complete a multi-jurisdictional plan, including the Cities and Town of Fennimore, the City and Town of Platteville, and the Village of Potosi and the Village of Tennyson. Other municipalities who have received aid to assist them with their planning efforts include the Village of Livingston and the City of Shullsburg. These plans will become increasingly important as there continue to be individual urban development projects which may cause local water quality problems if they are not planned for and if local and/or state ordinances and rules are not followed.

The one construction project in the basin that poses the greatest potential erosion problem is the reconstruction of US Highway 151 between Platteville and Dickeyville, and from Belmont to

Platteville. Large highway projects can be a major source of sediment delivery to nearby streams if adequate erosion controls measures are not installed and properly maintained. The potential for sediment delivery is even more critical in the Driftless Region because of the steeper slopes. This highway project is scheduled to begin in the year 2002. Streams in the basin that will be threatened by this project are Rountree Branch, McAdam Branch, and Indian Creek.

There are 23 permitted municipal wastewater treatment plants (WWTP) in the basin (Table D). Most of them are small plants. Only Platteville has a design discharge flow in excess of 1,000,000 gallons per day. Most of the WWTP are in good operating condition. Wisconsin's wastewater management program has instituted reporting requirements aimed at identifying treatment plant operation problems early so municipalities can address them before they become too serious and costly. As a result of permitting and reporting requirements, and because of the millions of public tax dollars spent to upgrade and improve wastewater treatment plants in the basin, effluent from wastewater treatment plants is no longer the water quality concern it once was. Aging sewer collection systems in many communities in the basin are subject to increasing water inflow/infiltration problems. These systems need attention and could be improved by an ongoing sewer system management programs (Saltes, 2000).

Facility Name	County/ Watershed	Permit # Exp. Date	Design Flow(mgd)	Receiving Water	Q7,10 (CFS)	Stream Class	303d Status	Comments
Bagley Village	Grant (GP07)	60771 (3/31/05)	0.048	Unnamed Trib to Mississippi River	0.0	LAL	N	
Benton Village	Lafayette (GP01)	20672 (9/30/00)	0.147	Galena River	5.7	WWSF ERW	N	Newer Plant
Bloomington Village	Grant (GP05)	23400 (3/31/05)	0.092	Blake Fork	1.6	WWSF	R-add	
Cassville Village	Grant (GP07)	21423 (9/30/01)	0.396	Mississippi River Via Jack Oak Slough	2184	FAL	N	
Cuba City	Lafayette (GP01)	22217 (12/31/05)	0.300	Coon Branch	<0.01	LAL	R-add	
Dickeyville	Grant (GP02)	23817 (12/31/03)	0.170	Trib to Indian Creek	<0.01	LAL	N	
GCA Evergreen Village, Inc.	Lafayette (GP03)	60623 (9/30/04)	0.015	Rountree Branch	0.12	WWSF	R-add	Connection to Platteville wastewater system considered
Fennimore City	Grant (GP06)	23981 (12/31/04)	0.620	Gregory Branch	0.01	LFF	R-add	
Hazel Green Village	Grant (GP01)	24210 (6/30/03)	0.168	Galena River	15(at state line)	WWSF ERW	N	
Jamestown Sanitary District #2	Grant (GP01)	30627 (3/31/03)	0.015	Trib to Menominee River	<0.01	LAL	N	
Jamestown Sanitary District #3	Grant (GP01)	31755 (12/31/95)	0.0088	Louisburg Creek	0.20	WWFF	Y	See Galena River Watershed (GP01) narrative.
Kieler Sanitary District #1	Grant (GP01)	29289 (12/31/03)	0.091	Sinnippee Creek	0.0	LAL	N	
Lancaster City	Grant (GP05)	24503 (12/31/02)	0.740	Trib to Pigeon Creek	0	LFF	N	
Livingston Village	Grant (GP03)	22187 (12/31/01)	0.100	Little Platte River	0.03	LFF	N	
Mount Hope Village	Grant (GP06)	20907 (6/30/04)	0.040	Little Grant River	<0.01	LFF	N	
Oak Park Community	Grant (GP03)	36676 (6/30/02)	0.0161	Trib to Blockhouse Creek	0.0			No formal stream classification done
Orchard Manor	Grant (GP02)	30503 (9/30/04)	0.05	Trib to Austin Branch	0.0	LAL	R-add	
Patch Grove Village	Grant (GP05)	22705 (3/31/05)	0.055	Trib to Blake Fork	<0.01	LFF	R-add	
Platteville City	Grant (GP03)	20435 (6/30/02)	2.050	Rountree Branch	0.94	WWSF	R-add	See Featured Watershed and watershed narrative
Potosi-Tennyson Sewer Commission	Grant (GP02)	21547 (6/30/02)	0.330	Mississippi River Wetland	NA	Wetland		
Shullsburg City	Lafayette (GP01)	28321 (3/31/05)	0.288	Shullsburg Branch, Trib to Shullsburg Br.	0.09, 0	WWSF, LAL	R-add	
Sinsinawa Dominicans, Inc.	Grant (GP01)	30520 (6/30/05)	0.06	Trib to Menominee River	<0.01	LAL	N	
Stitzer Sanitary District	Grant (GP06)	36285 (12/31/04)	0.025	Gregory Branch	0.03	COLD	R-add	

COUNTY LAND AND WATER RESOURCE MANAGEMENT PLANS

Recent Wisconsin legislation required counties to prepare countywide land and water resources management plans. The intent of this legislation is to "foster and support a locally led process that improves decision-making, streamlines administrative and delivery mechanisms, and better utilizes local, state and federal funds to protect Wisconsin's land and water resources." (DATCP, 1998) Both Grant and Lafayette counties have prepared plans that have been approved by the Wisconsin Land and Water Conservation Board. Counties can receive state funding to assist with projects that result from the land and water resource management plans.

The LCDs of Grant and Lafayette counties initiated a public process to get county residents' views and concerns regarding land and water resource issues. Participants in each county identified and ranked resource concerns. LCD staff, working with other agency staff, then developed a set of solutions for each issue and action items aimed at implementing the solutions. For example, residents in Grant County identified "inappropriate and inadequate erosion control practices allow for excessive soil erosion" (Thompson and Lange, 1999). Proposed solutions included "continue promotion of CRP/CREP", "request interagency task force for Pool 11", and "establish baseline and long-term measure of resource condition". An example from Lafayette County is "protecting the integrity of streams and streambanks" (Schroedl and Lange, 1999).

Many of the issues identified by Grant and Lafayette County citizens mirror or are similar to resource management concerns of the DNR. The county land and water resource plans, coupled with the DNR's State of the Basin Reports (basin plans), provide the base for developing multi-agency partnership approach to resource issues management involving local conservation groups and the public.

If you are interested in the complete land and water management plan for either county, contact the respective county LCD. They are: Grant County LCD, 150 West Alona Ln., Lancaster, Wisconsin 53813 (608-723-6377), and Lafayette County LCD, 1845 Center Drive, Darlington, Wisconsin 53530 (608-776-3836).

PARTNERSHIP ORGANIZATIONS

The many conservation groups in the basin include local agencies such as the county LCDs, regional agencies such as the Southwest Badger RC&D, federal agencies such as NRCS, and local private non-profit conservation and sportsmen groups such as the Friends of Rountree Branch and the Harry and Laura Nohr chapter of Trout Unlimited. All of these groups have been very active in habitat restoration or natural resource projects.

The Southwest Badger Resource Conservation and Development is a non-profit rural development organization. It focuses the conservation, development, and utilization of regional resources. The Southwest Badger RC&D area includes Grant, Lafayette, Iowa, Green, Crawford, LaCrosse, Richland, Vernon and Sauk counties. Its goal is to promote economic development through sustainable use of natural resources in the area. The RC&D will be looking for ways to promote economic growth in the region.

One of Southwest Badger's primary goals is to form partnerships with local units of governments, local agencies, trade groups, agricultural groups, conservation groups and interested local citizens to improve regional social, economic, and environmental needs. One project they have undertaken is looking at means of improving forestry in the region. Improving forestry in the basin will also have a water quality and quantity benefit. Preliminary research from western Dane County indicates that forested hillsides improve infiltration of rainwater into shallow aquifers that provide baseflow for many streams in southwest Wisconsin. Forested hillsides also will reduce erosive runoff from slopes (Potter, 1997).

PUBLIC REVIEW PROCESS

A period for public review of the State of the Basin Report was held the last two weeks of March 2001. This review period gave the public the opportunity to comment on a draft of the Grant-Platte State of the Basin Report. During this period, maps of the basin and the report were presented to the public at an open house held at the Park Inn in Platteville. DNR staff was available at the open house to gather feedback from the public regarding the State of the Basin Report and to answer any questions that the public had. Overall, many of the submitted comments regarded specific resources, especially Leggett and Newell Creeks in the Platte River Watershed and Gregory Branch in the Upper Grant River Watershed. Other comments centered on local citizen stream monitoring efforts and specific problems and conditions of certain resources. In addition, some general comments about the whole basin were also recorded. Every attempt was made to address the comments submitted during the public review period in the Grant-Platte Basin State of the Basin Report.

REFERENCES

1. Addis, James, et.al., Wisconsin's Biodiversity as a Management Issue, Wisconsin Department of Natural Resources, 1995.

2. Albert, Dennis A. Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: A Working Map and Classification, U.S. Department of Agriculture, North Central Forest Experiment Station, General Technical Report NC-178, 1994.

3. America's Most Endangered Rivers of 1998, American Rivers, 1998.

4. Amiel, Ray. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Forestry, 2000

5. Bachhuber, Jim, Keith Foye, Rita Moore, and Andy Morton. A Non-point Source Control Plan for the Lower Grant River Priority Watershed, Wisconsin Department of Natural Resources, 1991.

6. Bennwitz, Thomas. Personal Communications, Wisconsin Department of Natural Resources, South Central Region Waste Management, 1998.

7. Brandt, Paul F. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Wildlife Management, 1999.

8. Corsi, Steven R., David J. Graczyk, David W. Owens, and Roger T. Bannerman. "Unit-Area Loads of Suspended Sediment, Suspended Solids, and Total Phosphorus From Small Watersheds in Wisconsin", USGS Fact Sheet FS-195-97, United States Geological Survey, 1997.

9. Crossley, Alan. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Wildlife Management, 2000.

10. Curtis, John T. Vegetation of Wisconsin, University of Wisconsin Press, 1959.

11. Department of Agriculture, Trade and Consumer Protection, (DATCP, 19990401, Atrazine Use Prohibition Areas, DATCP, 1999: Department of Agriculture, Trade and Consumer Protection, (DATCP), Madison, WI.

12. Edwards, Richard. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Waters Program, 2001.

13. Environmental Protection Agency (EPA). Integrated Assessment of Hypoxia in the northern Gulf of Mexico (draft), Office of Watershed and Wetlands, Mississippi River Basin, 1999.

14. Fix, Steven M. Grant-Platte Rivers Water Quality Management Plan, Wisconsin Department of Natural Resources, 1991.

15. Fix, Steven M. Personal Observations, Wisconsin Department of Natural Resources, Watershed Management, 1994-2000.

16. Forbes, Anne M. Population Dynamics of Smallmouth Bass (*Micropterus dolomieui)* in the Galena (Fever) River and One of its Tributaries, Technical Bulletin No. 165, Wisconsin Department of Natural Resources, 1989.

17. Forbes, A.M. "Summary of Survey Data for Smallmouth Bass in Wisconsin Streams, 1952-80", Wisconsin Department of Natural Resources, Research Report 133, 1985.

18. Frame, D. and Weber, J. "WASI: A New Initiative Seeking Solutions." PDPW-Dairy Bottom Line. Page 15. March/April 2001.

19. Gamman, James R., Michael D. Johnson, Charles E. Mays, David A. Schiappa, William L. Fisher, and Bradley L. Pearman. 1983. Effects of Agriculture on Stream Fauna in Centrall Indiana. EPA-600/S3-83-020.

20. Gebert, Warren A. And William R Krug. "Streamflow Trends in Wisconsin's Driftless Area", in Water Resources Bulletin, American Water Resources Association, 1996.

21. Graczyk, David J. "Surface-Water Hydrology and Quality", in Surface-Water Hydrology and Quantity, and Macroinvertebrate and Smallmouth Bass Populations in Four Stream Basins in Southwestern Wisconsin, 1987-90, David J. Graczyk, editor, U.S. Geological Survey, Water Resources Investigation Report 93-4024, 1993.

22. Grant County Land Conservation Department. "Platte River Watershed EQIP Priority Area Proposal" (unpublished report), 1997.

23. Grant County. "1997 Annual Report", Grant County Land Conservation Committee, 1998.

24. Hole, Francis D. Soils of Wisconsin, University of Wisconsin Press, 1976.

25. Hollingsworth, Craig. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Forestry, 1999.

26. Holmstrom, B.K., D.L. Olson, and B.R.Ellefson. Water Resources Data Wisconsin Water Year 1998, Water-Data Report WI-98-1, U.S. Geological Survey, 1999.

27. Kerr, Roger. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Lands Management, 1998.

28. Knox, James C. "Human Impacts On Wisconsin Stream Channels", in Annals of the Association of American Geographers, Vol. 67, No.3, September 1977, pp. 323-342.

29. Kroner, Ron, Joe Ball, Mike Miller. The Galena River Priority Watershed Project: Bioassessment Final Report, Wisconsin Department of Natural Resources, 1992.

30. Lange, Kenneth J. A Postglacial Vegetational History of Sauk County and Caledonia Township, Columbia County, South Central Wisconsin, Wisconsin Department of Natural Resources, Technical Bulletin No. 168, 1990.

31. Lieurance, Michael. Personal Communication, USDA Natural Resources Conservation Service, Grant County, 1998.

32. Lillie, Richard A. and Roger A. Schlesser, "Macroinvertebrate Populations", in Surface-Water Hydrology and Quantity, and Macroinvertebrate and Smallmouth Bass Populations in Four Stream Basins in Southwestern Wisconsin, 1987-90, David J. Graczyk, editor, U.S. Geological Survey, Water Resources Investigation Report 93-4024, 1993.

33. Lyons, J. Personal Communication, Wisconsin Department of Natural Resources, Integrated Science Services (Research), 2000 and 2001.

34. Lyons, J, B.M. Weigel, L.K. Paine and D.J. Undersander. "Influence of Intensive Rotational Grazing on Bank Erosion, Fish Habitat Quality and Fish Communities in Southwestern Wisconsin Trout Streams" in Journal of Soil and Water Conservation, 2000a.

35. Lyons, John, Stanley W. Trimble and Laura K. Paine. "Grass Versus Trees: Managing Riparian Areas to Benefit Streams of Central North America", in Journal of the American Water Resources Association, Vol. 36, No. 4, 2000b.

36. Marshall, Dave. "Coon Br. Investigation" (unpublished report in files), Wisconsin Department of Natural Resources, South Central Region Waters Program, 1995.

37. Marshall, Dave. Personal Communications, Wisconsin Department of Natural Resources, South Central Region Watershed Management, 1998-2000.

38. Marshall, Dave and Jack Saltes. "Water Quality Report: The Kieler Wastewater Treatment Plant and Sinnapee Creek, Grant County, WI" (unpublished report). Wisconsin Department of Natural Resources, South Central Region Waters Program, 1998a.

39. Marshall, David. "Use Classification of Diggings Creek and Preliminary Mining Waste Impact Assessment" (unpublished report), Wisconsin Department of Natural Resources, South Central Region Waters Program, 1998b.

40. Marshall, David W. "Grant-Platte Basin: Macroinvertebrate Monitoring Results" (unpublished report), Wisconsin Department of Natural Resources, South Central Region Waters Program, 1999.

41. Martin, Lawrence. The Physical Geography of Wisconsin, University of Wisconsin Press, 1965.

42. Mason, John W., John D. Lyons, and Roger A. Kerr, "Smallmouth Bass Populations", in Surface-Water Hydrology and Quantity, and Macroinvertebrate and Smallmouth Bass Populations in Four Stream Basins in Southwestern Wisconsin, 1987-90, David J. Graczyk, editor, U.S. Geological Survey, Water Resources Investigation Report 93-4024, 1993.

43. Midwest Reclamation Planners. Grant County Soil Erosion Control Plan, Grant County Land Conservation Committee, (no date).

44. Monroe, Diane. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Waters Program, 2000.

45. Ostrom, Marcia R and Douglas B Jackson-Smith. "The Use and Performance of Management Intensive Rotational Grazing Among Wisconsin Dairy Farms in the 1990s", Program on Agricultural Technology Studies (PATS) Research Report No. 8, UW-Extension, 2000.

46. Potter, Ken. Personal Communication. University of Wisconsin, Department of Civil and Environmental Engineering, 1997.

47. Potter, Ken. "Hydrological Impacts of Changing Land Management Practices in a Moderate-Sized Agricultural Catchment." Water Resources Research, Volume 27, Number 5, 845-855. May, 1991.

48. Saltes, Jack. Personal Communications, Wisconsin Department of Natural Resources, South Central Region Waters Program, 2000.

49. Sample, David W. and Michael J Mossman. Managing Habitat for Grassland Birds: A Guide for Wisconsin, Wisconsin Department of Natural Resources, 1997.

50. Schlesser, Roger. “Sinnipee Creek at Kieler: Triennial Standards Review Kieler WWTP” (unpublished report), Wisconsin Department of Natural Resources, South Central Region Waters Program, 1989a.

51. Schlesser, Roger. “Gregory Branch at Fennimore: Triennial Standards Review Fennimore WWTP” (unpublished report), Wisconsin Department of Natural Resources, 1989b.

52. Schroedl, Roy and Roger Lange, Lafayette County Land and Water Resource Management Plan, Lafayette Land Conservation Department, 1999.

53. Schroedl, Roy, Nikki Larson, and Roger J. Lange. “Lafayette County LWRM Water Quality Survey”, Lafayette County Land Conservation Department, 2000.

54. Sims, Bradd. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Fisheries Management, 2000

55. Singer, Matthew. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Forestry, 1999.

56. Smith, Tom D. and Joseph R. Ball. Surface Water Resources of Grant County, Wisconsin Department of Natural Resources, 1972.

57. Stewart, Jana S., Diana M Downes, Lizhu Wang, Judy Wierl and Roger Bannerman. “Influences of Riparian Corridors on Aquatic Biota in Agricultural Watersheds” in International Conference on Riparian Ecology and Management in Multi-Land Use Watersheds, American Water Resources Association, 2000.

58. Sullivan, J.F. and Mark B. Endris. “Zebra Mussel Induced Water Quality Impacts in the Mississippi River Observed During the Summer of 1997”, Wisconsin Department of Natural Resources, 1998.

59. Thompson, Barbara and Roger Lange, Grant County Land and Water Resource Management Plan, Grant County Land Conservation Department, 1999.

60. Trout Unlimited. Water Monitoring Program Webpage. http://members.tripod.com/nohrchapter/monitor_home.htm. May, 2001.

61. University of Wisconsin-Madison. Integrating the Groundwater Component into the Priority Watershed Program: A Case Study of the Rattlesnake Creek Watershed, Water Resources Management Program, Institute for Environmental Studies, 1989.

62. Vollrath, Michael. Personal Communications, Wisconsin Department Natural Resources, South Central Region Watershed Management, 1998-2001.

63. Wang, Lizhu, John Lyons, Paul Kanehl. Evaluation of the Wisconsin Priority Watershed Program for Improving Stream Habitat and Fish Communities, Wisconsin Department of Natural Resources, 1994.

64. Wang, Lizhu, John Lyons, Paul Kanehl. Evaluation of the Wisconsin Priority Watershed Program for Improving Stream Habitat and Fish Communities, Wisconsin Department of Natural Resources, 1996.

65. Wang, Lizhu, John Lyons, Paul Kanehl, and Ronald Gatti. “Influences of Watershed Land Use on Habitat Quality and Biotic Integrity in Wisconsin Streams” in Fisheries, 1997.

66. Webber, William. Personal Communication, Wisconsin Department of Natural Resources, South Central Region , 2000.

67. Wisconsin Department of Agriculture, Trade and Consumer Protection. 1997 Accomplishment Report, 1998.

68. Wisconsin Department of Agriculture, Trade and Consumer Protection. 1999 Wisconsin Agricultural Statistics, 1999.

69. Wisconsin Department of Agriculture, Trade and Consumer Protection. "Land and Water Resource Management Plan Guidelines", 1998

70. Wisconsin Department of Natural Resources. "Roaster Pile Remediation Project New Diggings" (unpublished report in Region Solid Waste files), South Central Region , 1998.

71. Wisconsin Department of Natural Resources. Wisconsin Trout Streams, 1980.

72. Wisconsin Department of Natural Resources. The Endangered and Threatened Vertebrate Species of Wisconsin, Bureau of Endangered Resources, 1997.

73. Wisconsin Department of Natural Resources (WDNR). South Central Region Waters Files, 1992-2001.

74. Zine, Matt. Personal Communication, Wisconsin Department of Natural Resources, South Central Region Wildlife Management, 2000.